

CLAIMS

1. A gamma correction circuit which outputs a gamma-corrected set voltage in order to correct an image voltage in accordance with a nonlinear correlation between an applied voltage and a brightness of a display element, comprising:

a gamma correction data output circuit which outputs a plurality of gamma correction data for each color of RGB;

a plurality of registers which input and hold the plurality of gamma correction data; and

a plurality of D/A converters each of which converts the data of each of the plurality of registers into an analog voltage and outputs a gamma-corrected set voltage.

2. The gamma correction circuit according to Claim 1, wherein the gamma-corrected set voltage is output via a buffer.

3. The gamma correction circuit according to Claim 1 or 2, wherein the gamma correction data output circuit outputs a plurality of gamma correction data that are input from outside for each color of RGB during an adjustment of the gamma-corrected set voltage, and fetches a plurality of gamma correction data for each color of RGB from a nonvolatile memory after the adjustment of the gamma-corrected set voltage, and outputs the plurality of gamma correction data.

4. The gamma correction circuit according to any of Claims 1 to 3, wherein the gamma correction data output circuit outputs a plurality of gamma correction data for each color of RGB in turn in accordance with a horizontal synchronization signal of a display panel.

5. The gamma correction circuit according to any of Claims 1 to 3, wherein the plurality of registers are provided for each color of RGB, and the data of the plurality of registers of each color are selected in turn in accordance with a horizontal synchronization signal of a display panel and input to the D/A converters.

6. The gamma correction circuit according to any of Claims 1 to 3, wherein the plurality of registers and the plurality of D/A converters are provided for each color of RGB and gamma-corrected set voltages of each color are selected in turn in accordance with a horizontal synchronization signal of the display panel and output.

7. The gamma correction circuit according to Claim 5 or 6, wherein the plurality of registers provided for each color of RGB hold gamma correction data that are fetched from a nonvolatile memory for each color of RGB when power is turned ON.

8. A display panel in which a plurality of display elements are arranged in two dimensions for the colors of RGB and voltages of source

lines are applied to a plurality of display elements connected to a selected gate line, wherein a plurality of display elements for one color are connected to each gate line, and each gate line connected to a plurality of display elements for each color are selected in turn in accordance with a horizontal synchronization signal.

9. A display device, comprising:

the gamma correction circuit according to any of Claims 1 to 7;

a source driver to which image data are input and which outputs corrected image voltages by selecting corresponding gamma-corrected set voltage or interpolation voltage thereof; and

the display panel according to claim 8 in which gate lines are driven by a gate driver and the corrected image voltages of the source driver are input to source lines.

10. The display device according to Claim 9, wherein the gamma correction circuit outputs gamma-corrected set voltages for each color of RGB in turn in accordance with a horizontal synchronization signal, and a gate line to which display elements of the associated color are connected is selected for the display panel.

11. The display device according to Claim 9 or 10, wherein the display device is a liquid crystal display device.